

Wrist Rest Assembly

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Technical Field

The present invention relates to wrist rest assemblies for use along the front edges of devices to be operated by a person's hands or fingers, such as in front of a computer keyboard, computer mouse or other input device.

Background Art

Wrist rest assemblies are known for use along the front edge of a device to be operated by a person's hands or fingers, such as in front of a computer keyboard, computer mouse or other input device. It has been suggested that the use of such wrist rest assemblies can restrict damage to wrists from prolonged use of such devices. Heretofore, however, known wrist rest assemblies have been formed with layers of cushioning material that do not provide the quality of support for the wrists that may be desired.

25 Disclosure of Invention

The present invention provides a wrist rest assembly for use along the front edge of a device to be operated by a person's hands or fingers, such as in front of a computer key board, computer mouse or other input device, which wrist rest assembly provides a layer of cushioning material that can provide better support for the wrists than has heretofore been provided, and further affords a degree of movement of the supported wrist relative to the surface on which the wrist rest is supported that has not been provided by known prior art wrist rest assemblies.

According to the present invention there is provided a wrist rest assembly comprising (1) a base having an upper pad support surface, which base has a bottom or supported surface adapted to be supported on
5 a horizontal surface along the front edge of the device; and (2) a pad comprising a layer of gel. A bottom surface of the elongate pad is supported on the upper pad support surface of the base, and the pad has a sufficient width between its edges and thickness
10 between its top and bottom surfaces (e.g., a thickness in the range of about 1/8 inch to 5 inches and a width in the range of about 1/2 to 10 inches with the larger widths providing both wrist and fore arm support) to afford supporting a users wrists on the top surface to
15 help keep the wrists in a neutral position with a portion of the layer of gel beneath and conforming to the supported wrists to distribute the weight of the wrists over a wide area and affording significant motion of the top surface of the pad with the supported
20 wrists relative to the bottom surface in a plane generally parallel to the upper surface of the base.

Preferably the gel is a stable elastomeric block polymer gel similar to the gel described in U.S. Patent No. 3,676,387, (the content whereof is hereby
25 incorporated herein by reference) and preferably is the gel described in Example No. 3 of British Patent No. GB 1,268,431 (the content whereof is hereby incorporated herein by reference) except that the ratio of oil to block copolymer is in the range of 4 to 1 to 10 to 1
30 rather than being 5 to 1 as is described in that Example No. 3. That gel is quite similar to the gel in the pad commercially available from Minnesota Mining and Manufacturing Company, St. Paul, Minnesota, under the trade designation "Reston (T.M.) Flotation Pad",
35 which pad for many years has been used in beds, wheel chairs and the like to prevent pressure points. Also,

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preferably the gel has a covering comprising an elongate tubular layer of flexible polymeric material (e.g., polyurethane) around the gel, which tubular layer has sealed ends to retain the gel and provides a
5 flexible barrier to the escape of mineral oil from within the gel. The pad assembly can further include an outer layer over the top surface of the pad of a soft conformable material adapted for comfortable contact with a users wrists.

10 Preferably the base comprises a top portion having the upper pad support surface supporting the bottom surface of the elongate pad; a bottom portion having the bottom supported surface adapted to be supported on a horizontal surface; and means for supporting the top
15 portion on the bottom portion with the elongate pad at a predetermined one of several different distances above the supported surface. That means is provided by the top portion of the base comprising longitudinally extending rails projecting outwardly in
20 opposite directions generally parallel to its upper pad support surface, and the bottom portion including generally parallel spaced vertically upwardly projecting support portions having opposed surfaces defining sets of grooves parallel to the supported
25 surface and vertically spaced along the support portions, each of which sets of grooves is adapted to receive the rails to support the top portion with the top surface of the elongate pad at a different distance above the supported surface depending on which set of
30 grooves the rails are engaged in.

While there might be advantages for some applications in allowing the top portion to reciprocate along the grooves of the bottom portion, thereby affording large transverse movements of the wrists with
35 the top portion without relocating the wrists along the top surface of the pad; as illustrated the assembly

includes means for releasably fixing the top portion relative to the bottom portions with corresponding ends of the top and bottom portions generally in alignment.

While the wrist rest assembly including its base is very useful, the base is not a necessity to using the pad. Thus generally the method according to the present invention for supporting the wrists of a person operating a device such as a computer keyboard, computer mouse or other input device comprises: (1) providing a pad comprising a layer of gel, which pad has opposite top and bottom surfaces, and opposite longitudinally extending edges; (2) supporting the pad along the front edge of the device; and (3) supporting the users wrists along the top surface of pad; the pad having a sufficient thickness between the top and bottom surfaces and width between the edges to have a portion of the layer of gel beneath and conforming to the supported wrists and to afford significant motion of the top surface of the pad with the supported wrists relative to the bottom surface in a horizontal plane.

Brief Description of the Drawing

The present invention will be further described with reference to the accompanying drawing wherein like reference numerals refer to like parts in the several views, and wherein:

Figures 1 through 5 are perspective views sequentially illustrating the assembly of a wrist rest assembly according to the present invention;

Figure 6 is an enlarged sectional view taken approximately along lines 6-6 of Figure 5; and

Figures 7, 8 and 9 illustrate uses of the wrist rest assembly of Figure 1 or a shortened or lengthened version thereof.

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Detailed Description of the Preferred Embodiment

Referring now to Figure 5 of the drawing there is illustrated a wrist rest assembly according to the present invention, generally designated by the reference numeral 10. The wrist rest assembly 10 is adapted for use along the front edge of a device to be operated by a person's hands or fingers, such as in front of a computer keyboard 11 as is illustrated in Figure 7 or in front of a computer mouse 12 as is illustrated in Figure 8 with a shortened version 10a thereof, or in front of a computer keyboard 11 and mouse 12 as is illustrated in Figure 9 with an extended version 10b thereof, to provide support for the wrists of a person using the keyboard 11 and/or mouse 12.

Generally, the wrist rest assembly 10 comprises (1) an elongate base 14 having an elongate upper pad support surface 15 (see Figure 6), which base 14 has a bottom supported surface 16 generally parallel to its upper pad support surface 15 adapted to be supported on a horizontal surface along the front edge of the device 11 or 12; and (2) an elongate pad 17 comprising a covering 18 and a layer of gel 19 within the covering 18. The pad 17, which is shown separated from the base 14 in Figure 1, has opposite top and bottom surfaces 20 and 21, opposite longitudinally extending edges 22, and opposite ends 24. The bottom surface 21 of the elongate pad 17 is supported on and can be adhered to the upper pad support surface 15 of the base 14, and the pad 17 has a sufficient thickness between its top and bottom surfaces 20 and 21 and sufficient width between its edges 22 to afford supporting a users wrists along its top surface 20 with a portion of the layer of gel 19 beneath and conforming to the supported wrists and affording significant motion of the top surface 20 of the pad with the supported wrists relative to its bottom surface 21 in a plane generally

parallel to the upper surface 15 of the base 14. As an example, when the gel 19 is that gel described in Example No. 3 in British Patent No. GB 1,268,431 except that the ratio of oil to block copolymer is 6 to 1 rather than being 5 to 1 as is described in that Example No. 3; the layer of that gel 19 has a thickness of about 3/8 inch and a width between the edges of the pad 17 of about 2.9 inches; and the covering 18 is of 0.002 inch thick polyurethane; that motion of the top surface 20 of the pad with a supported wrist relative to its bottom surface 21 in a plane generally parallel to the supported surface 16 of the base 14 allows the supported wrist and the users hand to move in any direction in a generally circular area having a diameter of about one inch. The area of such movement could be made larger or smaller by using different gel compositions, but for most embodiments of the wrist rest should be a circular area having a diameter of at least 1/2 inch.

Figures 1 through 4 sequentially illustrate the assembly of the wrist rest assembly 10 and certain details about its structure.

The covering 18 of the pad 17, best seen in Figure 1, is an elongate tubular layer of a flexible polymeric material (e.g., 0.001 to 0.003 inch thick polyurethane) around the gel 19 which is sealed at the ends 24 of the pad 17 (e.g., by heat sealing) to retain the gel 19 within the tubular layer and provide a flexible barrier to the escape of mineral oil or other liquids from within the gel 19.

As is illustrated in Figures 2 through 6, the assembly 10 further includes an outer layer 26 over the top surface 20 of the pad 17 adapted for comfortable contact with a users wrists. That outer layer 26 can, for example, be made of a soft conformable non-woven polyurethane material, or of other materials such as

leather, vinyl, or the material commercially designated
"Dacron" (T.M.) sold by DuPont, Wilmington, Delaware,
or the material commercially designated "Ultron" (R.T.M.).

5 The wrist rest assembly 10 tensions the outer
layer 26 over the top surface 20 of the pad 17. As is
best seen in Figures 1 and 6, the base 14 includes an
elongate support plate 28 (e.g., an extrusion of rigid
polyvinyl chloride or polystyrene) including a
10 generally plate-like top portion 29 having opposite
sides 30, opposite surface 31, and an opposite planar upper
pad support surface 15, and also includes bottom surface
33. The support plate 28 also includes sides of the top portion
15 portions 34 along the opposite sides of the top portion
29 and extending away from the bottom surface 33 of the
top portion 29 to form with the top portion 29 an
elongate recess 36. The pad 17 is supported along the
upper pad support surface 15 of the support plate 28;
20 and the outer layer 26 is in the form of a elongate
sleeve having opposite end portions 38 and extends
around the elongate support plate 28 and the elongate
pad 17 (see Figure 2) with its end portions 38
extending past their ends. The base 14 further
25 includes an elongate retaining member 40 (e.g., also an
extrusion of rigid polyvinyl chloride or polystyrene)
comprising a tensioning portion 42 within and extending
along the elongate recess 36 with a portion of the
outer layer 26 between the tensioning portion 42 and
30 the support plate 28 (see Figure 6) to tension the
outer layer 26 across the top surface 20 of the pad 17.
Means (not shown) in the form of a layer of adhesive
or ultrasonic welding, or screws, or rivets, or pins,
35 or a friction fit between the tensioning portion 42 and
the support plate 28 are provided for retaining the
tensioning portion 42 within the elongate recess 36.

Means are also provided for retaining the end portions 38 of the sleeve or outer layer 26 around the ends 24 of the pad 17 (see Figure 3). The retaining member 40 has opposite ends 44 at the ends 24 of the pad 17 and openings 46 into those ends 44. The end portions 38 of the sleeve of outer layer 26 that extend beyond the ends 24 of the pad 17 are positioned in the openings 46. The assembly 10 includes end caps 48 attached at the opposite ends 44 of the retaining member 40 by two self tapping screws 50 extending through the end caps 48 and engaging openings 51 in the retaining member 40. The end caps 48 include projections 52 projecting into the openings 46 in the retaining member 40 that engage the end portions 38 of the outer layer 26 sleeve to provide the means for retaining those end portions 38 around the ends 24 of the pad 17.

The support plate 28 and the retaining member 40 together provide a top portion 54 for the base 14 that has the upper pad support surface 15 supporting the bottom surface 21 of the elongate pad 17. The base 14 also includes a bottom portion 56 having the bottom supported surface 16 adapted to be supported on a horizontal surface; and, as is best seen in Figure 4 and 6, means are provided for supporting the top portion 54 on the bottom portion 56 with the top surface 20 of the elongate pad 17 at a desired predetermined one of several different distances above the bottom surface 16. Those means are provided in that the top portion 54 of the base 14 comprises longitudinally extending rails 58 on the retaining member 40 projecting outwardly in opposite directions generally parallel to its upper surface 15; and the bottom portion 56 of the base 14 includes generally parallel spaced vertically upwardly projecting support portions 59 having opposed surfaces defining sets of

horizontal grooves 60a, 60b and 60c vertically spaced along the support portions 59. Each of the sets of grooves 60a, 60b or 60c is adapted to slidably receive the rails 58 to support the top surface 20 of the pad 5 17 on the top portion 54 at a different distance above the bottom supported surface 16. Thus, the top portion 54 of the base 14 can be slid longitudinally of its bottom portion 56 to disengage the rails 58 from one set of the grooves 60a, 60b or 60c with which they are 10 engaged, and subsequently engaged with a different set of the grooves 60a, 60b or 60c to change the distance between the supported surface 16 and the top surface 20 of the pad as may be desirable to properly support a users wrists.

15 As can be seen in Figure 5, the top and bottom portions 54 and 56 are both of about the same length, and the assembly 10 further includes means for releasably retaining the top portion 54 in the bottom portion 56 with the corresponding ends of the top and 20 bottom portions 54 and 56 generally in alignment. That means comprises removable end covers 62 each adapted for engagement with an end of the top portion 54 and extending across and around the adjacent end of the bottom portion 56 so that the end of the top portion 54 25 with which the end cover 62 is engaged can not move further into the bottom portion 56. Engagement between each end cover 62 and an end of the top portion 54 is provided in that the end caps 48 have opposite outwardly projecting vertically extending tabs 64 30 (Figure 3) at their ends adjacent the support portions 59, and the end covers 62 have opposed inwardly projecting vertically extending tabs 66 (Figure 5) adapted to engage between the tabs 64 on the end caps 48 and the ends 44 of the retaining member 40 when the 35 end cover 62 is slid vertically toward the supported surface 16 to the position illustrated in Figure 5.

With both end covers 62 engaged with the ends of the top and bottom portion 54 and 56 the top portion 54 cannot move in the bottom portion 56 in either direction, and thus is releasably retained in the
5 bottom portion 56 with the corresponding ends of the top and bottom portions 54 and 56 generally in alignment.

With either or both of the end covers 62 removed, the top portion 54 can reciprocate along the bottom
10 portion 56 by sliding movement of the rails 58 in the surfaces defining the grooves 60a, 60b or 60c with which they are engaged which affords removing the top portion 54 from the bottom portion 56 and re-engaging it with the rails 58 in a different set of grooves 60a,
15 60b or 60c to change the distance between the top surface 20 of the pad and the supported surface 16. Such reciprocation afforded by removing one or both of the end covers 62 might also provide advantages for some uses of the assembly 10 to affording large
20 transverse movements of the wrists with the top portion 54 without relocating the wrists along the top surface 20 of the pad 17 (e.g., to move one hand from the typing keys to the numerical pad of a computer keyboard without lifting the wrists from the pad 17).

25 The present invention has now been described with reference to one embodiment thereof. It will be apparent to those skilled in the art that many changes can be made in the embodiment described without departing from the scope of the present invention. For
30 example: the wrist rest assembly can be made any length; the pad support surface of the base could have shapes other than generally planar such as being arcuate around a longitudinal axis to make it, for example, cylindrically convex or concave, or could have
35 transverse recesses below where a users wrists would normally be supported; the bottom portion 56 of the

base could have more or less than three sets of grooves to provide larger or smaller ranges of adjustment; and the wrist rest assembly could further include a base plate attached along and having a portion projecting
5 from the supported surface 16 of base, which projecting portion is adapted to support the device, such as those base plates 70, 71 or 72 illustrated in Figures 7, 8 and 9. Thus, the scope of the present invention should not be limited to the structure described in this
10 application, but only by the structure described by the language of the claims and the equivalents thereof.